TOWARDS A DEFINITION OF LANGUAGE

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Abstract: The present paper focuses attention on various traditional and modern perspectives on language and on this basis various definitions of language are discussed. An emphasis is put on the theory of systems and the process of communication as points of departure for linguistic analysis. In this sense, the paper endorses the view that language is an open and complex adaptive and non-linear system of symbols and non-verbal signs which people use for communication. Language is constantly changing in relation to the environment, and language changes are necessary to maximize the process of communication.

Keywords: systems theory, non-linearity, perspectives on language, language signs, the process of communication

Abstrakt: Príspevok upriamuje pozornosť na rozličné tradičné i moderné perspektívy jazyka a na tomto základe sa rozoberajú rozličné definície jazyka. Dôraz sa kladie na teóriu systémov a proces komunikácie ako východiská pre lingvistickú analýzu. V tomto zmysle sa v príspevku prikláňame k názoru, že jazyk je otvorený a komplexný adaptačný a nelineárny systém symbolov a neverbálnych znakov, ktorý ľudia používajú na komunikáciu. Jazyk sa neustále mení vo vzťahu k životnému prostrediu a jazykové zmeny sú potrebné na to, aby sa maximalizoval proces komunikácie.

Kľúčové slová: teória systémov, nelineárnosť, perspektívy jazyka, jazykové znaky, proces komunikácie

INTRODUCTION

The following paper is an attempt to work towards an essential definition of language which might be of use for anyone interested in studying language in all its forms and manifestations. It is especially intended for university

students of English philology in this country who are supposed to take courses in various linguistic disciplines, and of course, for any reader interested in linguistic problems. The introductory course is entitled An Introduction into the Study of English, and in this course, our students are supposed to grow familiar with basic linguistic terminology, concepts, definitions, systems, theories, rules, units, principles, the scope of linguistics, the goals of linguistic theory, etc. From among the above categories it is the definition of language which has an exceptional status since it is at the core of any linguistic theory. There are numerous linguistic theories, each postulating and operating with its own definition of language, or its own perspective on language. At the same time, this presupposes that there are also many definitions of language that represent various linguistic movements. Language is viewed in various theories as "a genetic inheritance, a mathematical system, a social fact, the expression of individual identity, the outcome of dialogic interaction, a social semiotic, the intuitions of native speakers, the sum of attested data, a collection of memorized chunks, a rule-governed discrete combinatory system, or electrical activation in a distributed network" (Cook-Seidlhofer 1996, 4). There is a general consensus that language is a complex system and this fact "implies that the object of enquiry is not reducible to description by any of these theories, but needs to invoke several at once (even contradictory ones)" (Cook-Seidlhofer 1996, 4). For this reason I intend to analyse some basic definitions and perspectives on language, and on the basis of this analysis I would like to point to what should be considered essential to language. This in turn provides new perspectives on the study of various linguistic and applied linguistic disciplines, including grammar, historical linguistics, the second language acquisition and learning, etc.

SOME TRADITIONAL AND MODERN PERSPECTIVES ON LANGUAGE AND ITS FUNCTIONS

The first landmark definition is of course the definition of language by F. de Saussure (1916). This definition was commonly adopted, and in fact, it marked the beginning of modern linguistics. Saussure's approach to language has influenced a number of linguistic theories, and despite its age it has survived (with various alterations and modifications) up to now. Saussure's definition of language is very closely interrelated with his dichotomy *langue – parole*. In it, *langue* is conceived of as a structured system of signs while *parole* is the activity of speaking or the external manifestation of language. Spoken language includes the communication of concepts from the speaker to the hearer by means of signs. The core constituent in this definition is of course the **sign**. The term sign, like

the term language, has many different meanings, but the one chiefly relevant here is a "physical mark or event that carries information". It is something that stands for something else. Saussure (1916) defines the linguistic sign (symbol) as a two-sided entity which can be represented by the following diagram:
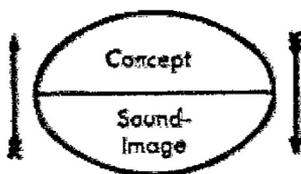

Fig. 1: Saussure's model of the sign

For Saussure, the linguistic sign is a combination of a concept and a sound (acoustic) image. For example, the sign "tree" is a combination of the concept "tree", a tall plant with a long trunk made of wood, and the sound sequence / tri:/. The sound sequence is the **signifier**, the concept is the **signified**. It must be stressed that both the concept and the acoustic image are abstractions – the signifier is not the actual sound wave, not the physical event, but the idea of a sound sequence, an image or a representation of such an event, and the signified is not the tree, not a concrete plant, but the idea of a tree, the representation of a class or category.

The combination of the concept and the acoustic image in the sign (symbol) is **arbitrary,** that is, there is absence of any similarity between the form of a linguistic sign and what it relates to in reality. In other words, the form of the sign is not conditioned by the piece of reality it refers to, but it is a matter of **convention**. That is why in English we say *table*, in German *der Tisch*, in French *la table*, and in Spanish *la mesa*.

The sign has a **general character** because it does not refer to a particular concept but general concepts, e. g. desk, house, window, door, etc. The transition from general to particular is carried out by means of **context**. It is the context that determines or completes the intended meaning of a sign or a sequence of signs.

The value of a sign depends on its relationships with other signs within the system. The following diagram is a good illustration (see Chandler 2007, 20):
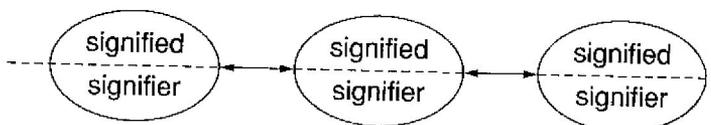

Fig. 2: The relations between signs

The *langue-parole* dichotomy and the concept of language as a structured system of signs used for communication, together with Saussure's remaining dichotomies (syntagmatic/paradigmatic, synchronic/diachronic) has inspired a number of structural and functional and cognitive linguistic theories. For example, in the Prague School of Linguistics, which is generally referred to as functionalist and structuralist, it was V. Mathesius, a famous Czech scholar and a prominent founding member of the Prague School, who proposed the following definition: "…language is a system of the means of expression, a system of signs, manifested in actual communication as the sum total of the possibilities available to the members of the same language community at a given time in a given place for the purpose of communication through speech, and identifiable from their realizations in particular utterances" (Mathesius 1975, 13). It is evident that the three core terms involved in this definition are the systemic nature of language, linguistic signs, and its communicative function in the broadest sense of the term. The communicative function of language was subsequently elaborated by R. Jakobson (see e. g. 1960) who, following K. Bühler (1934), proposed the following taxonomy of six functions: **referential** function by means of which we make reference to the world around us and inside us, **emotive** function, which serves to express feelings and emotional attitudes, **conative** function by means of which we exert influence on the behaviour of the receiver, **phatic** (or interactional) function, which describes the contact between the speaker and the hearer, **metalingual** function, which is used when we want to talk about language, **poetic (aesthetic)** function, which is the use of language for its own sake, mostly to give pleasure (literature). Jakobson's functions, similarly as Bühler's functions, are oriented towards the basic constituents of his model of the process of communication. Thus his model consists of six constituents: **context** (referential function), **message** (poetic function), **addresser** (emotive function), **addressee** (conative function), **contact** (phatic function), **code** (metalingual function).

 In this connection, Vachek (1975, 12 – 13), another prominent member of the Prague School, also pointed out that 'it is the communicative needs which are responsible for the systemic organization of the formal means by which language satisfies the communicative needs, and also for the changes of this systemic organization which occur in the course of the language's history.

The Prague School of linguistics has had a significant influence on the systemic and functional grammar whose main author is M. A. K. Halliday (see e. g. 1978, 1985, 2004). According to him, language is conceived as a 'meaning potential', that is, "as a means of expressing what the human organism ´can do´, in interaction with other human organisms, by turning it into what he ´can mean´. What he can mean (the semantic system) is, in turn, encoded into what

he ´can say´ (the lexicogrammatical system, or grammar and vocabulary); ...” (1979, 21). Thus meanings are expressed in wordings and wordings are finally re-encoded into sounds. The main difference between these schools of thought consists in the fact that Halliday utilizes two sets of language functions: meta-functions, and macro-functions. According to him, there are three meta-functions: **ideational** (experiential+logical), **interpersonal**, and **textual**. We can see that these functions are of a very general kind. By means of them language construes human experience, enacts our personal and social relationships with the people around us, and builds up sequences of discourse. As such they are embedded in the semantic system of language. Functionality is intrinsic to language; the entire architecture of language is arranged along functional lines.

In addition to his three meta-functions, Halliday (see e. g. 1978, 21 – 22) has also formulated a taxonomy of macro-functions:

1 *Instrumental* (‘I want’): satisfying material needs
2 *Regulatory* (‘do as I tell you’): controlling the behaviour of others
3 *Interactional* (‘me and you’): getting along with other people
4 *Personal* (‘here I come): identifying and expressing the self
5 *Heuristic* (‘tell me why’): exploring the world around and inside one
6 *Imaginative* (‘let’s pretend’): creating the world of one’s own
7 *Informative* (‘I’ve got something to tell you’): communicating new information.

In comparison with Jakobson’s classification, Halliday regards the use of language for enquiry and questioning as a separate category (heuristic function) and does not include the metalingual function in his taxonomy.

Generally speaking, Halliday’s position is that people use language to interact with one another to construct and maintain their interpersonal relationships and the social order that lies behind them, and in doing so they interpret and represent the world for one another and for themselves. Thus language is a natural part of the process of living. It is also used to ‘store’ the experience built up in the course of that process, both personal and collective.

There are two more functional approaches to language that are frequently mentioned in the literature on the subject: Van Valin’s *Role and reference grammar* (RRG), and Dik’s *Functional grammar* (FG). Van Valin (e. g. 1993) characterizes the RRG as follows: “Language is a system, and grammar is a system in the traditional structuralist sense; what distinguishes the RRG conception… is that grammatical structure can only be understood with reference to its semantic and communicative functions. Syntax is not autonomous.” (1993, 2)

Dik puts forth a similar perspective on language in FG. Language is "an instrument for communicative verbal interaction, and the basic assumption is that the various properties of natural languages should, wherever this is possible, be understood and explained in terms of the conditions imposed by their usage. The language system, therefore, is not considered as an autonomous set of rules and principles, the uses of which can only be considered in a secondary phase; rather it is assumed that the rules and principles composing the language system can only be adequately understood when they are analyzed in terms of conditions of use." (1991, 247)

Functionality is also at the core of *cognitive linguistics* (CL) and *cognitive grammar* (CG), represented mainly by Langacker 2008, and Taylor 2002. Taylor claims that a language is "a set of resources that are available to language users for the symbolization of thought, and for the communication of these symbolizations" (Taylor 2002, 30). Furthermore, language "is shaped and constrained by the functions it serves. These include the **semiological function** of allowing conceptualizations to be symbolized by means of sounds and gestures, as well as a multifaceted **interactive function** involving communication, manipulation, expressiveness, and social communion" (Langacker 2008, 7). CL's most fundamental tenet is that language is "part of cognition and that linguistic investigation contributes to understanding the human mind…" (Langacker 2008, 7).

The above approaches and definitions of language represent the communicative and cognitive perspective on language. The second major perspective on language is the so-called **syntactocentric** perspective. It is represented by N. Chomsky (see e. g. 1957, 1965, 1981, 1995, 2000a, 2000b, etc.) and his followers. In the first of the above works Chomsky defines language as "a set (finite or infinite) of sentences, each finite in length and constructed of a finite set of elements" (Chomsky 1957, 13). Chomsky takes a cognitive approach to the study of language. In his view, language is regarded as a combinatorial innate mental system and that we as human species are mentally predisposed to acquire it. For Chomsky, the goal of the linguistic theory is to determine what it is that native speakers know about their native language that enables them to speak and understand the language fluently, hence, the study of language is part of the wider study of **cognitive processes**. This perspective on language was originally referred to as **transformational-generative grammar (TGG)**. In one of his early works (1965), Chomsky postulated two levels of representation of the sentence – the **deep structure** and **the surface structure**. The deep structure, in fact, refers to the core semantic relations within the sentence while the surface structure is a phonological form of the sentence which has resulted from the application of phrase structure rules and specific

transformations or transformational rules, e. g. rules for converting declarative sentences into interrogative sentences, active voice into the passive voice, etc., which act on phrase structure rules.

Apart from the deep/surface structure distinction, Chomsky has drawn a distinction between **linguistic competence** and **linguistic performance.** Competence is "the speaker-hearer's knowledge of his language", while performance is "the actual use of language in concrete situations" (Chomsky 1965, 4). It is obvious that this dichotomy reminds us of the *langue – parole* distinction made by F. de Saussure.

However, there is ample evidence that his theory of language has a protean character. Approximately every decade he revises his own theory and builds a new one on a foundation of different assumptions (see e. g. Pinker-Jackendoff 2015, 228).

In 1986, Chomsky proposed a distinction between **I-language** and **E-language** that is similar, but not completely identical, to the competence-performance distinction. I-language refers to an internal computational system that is encoded in an individual brain. As such, it is a system of rules that computes over symbols that correspond to equivalence classes derived either from experience or other symbols (see e. g. Isac and Reiss 2008).It must be distinguished from E-language which encompasses all other notions of what a language is. It consists of the overt phenomena of linguistic interaction in the socio-cultural realm.

Chomsky also revised his conception of the human **language faculty**, that is, what is unique about human language. In a famous article written together with two biologists (see Hauser, Chomsky, Fitch 2002) he concentrates on such questions as what kind of biological system language is, what parts of a person's language ability (learned or built-in) are specific to language, and which aspects of the language capacity are uniquely human. The article (henceforth HCF) has attracted much attention among language scientists. From among language scientists I have chosen two prominent scholars – S. Pinker and R. Jackendoff – who in a response to this article presented their critical analysis of it.

In the article, HCF differentiated between "Narrow Language Faculty" and "Broad Language Faculty". The narrow language faculty refers to those aspects of language that are special to language while the broad language faculty is the faculty of language in its entirety, "including parts that are shared with other psychological abilities" (Pinker and Jackendoff 2015, 230). The most important hypothesis proposed by HCF is that the narrow language faculty "only includes recursion and is the only uniquely human component of the faculty of language". (Roughly, recursion refers to a constituent that contains a constituent of the same kind.) In fact, this means that recursion is "the mechanism

responsible for everything that distinguishes language both from other human capacities and from the capacities of animals" (Pinker and Jackendoff 2015, 230). Producing compelling evidence concerning the disparity between the recursion – only hypothesis and the facts of language, Pinker and Jackendoff claim "that the empirical case for the recursion – only hypothesis is extremely weak" (2015, 245). At the same time they are of the view that this hypothesis arises from Chomsky's 'current overall approach to the language faculty, the Minimalist Program'. It is based on the assumption that since language is a pairing of sounds with meanings, only representations of sound (Phonetic Form) and representations of meaning (Logical Form) 'are truly indispensable.' All other linguistic structures, including the long prominent deep structure and surface structure should be eliminated. Consequently, the Minimalist Program tends to ignore for example all the phenomena of phonology, most of the phenomena of inflexional and derivational morphology, many basic phrase structures, many phenomena of phrase and word order, such as topic and focus, figure and ground, etc. Since language combines words into hierarchical tree structures, the language faculty must include a mechanism for combining units. In the Minimalist Program such a mechanism is called **Merge**. Its task is to recursively join two elements (words and phrases) into a binary tree 'bearing the label of one of them'. According to Pinker and Jackendoff (2015, 247), "the Minimalist commitment to bare necessity leads to the conjecture that Merge is the only element necessary to create the system of language".

In comparison with the above functional and cognitive approaches to language, Chomsky takes a different position concerning the relationship between language and communication. While functional and cognitive linguists regard language as a tool of communication and give much attention to the process of communication and the process model of language, Chomsky claims that "…*language is not properly regarded as a system of communication. It is a system for expressing thought, something quite different. It can of course be used for communication, as anything people do – manner of walking or style of clothes or hair for example. But in any useful sense of the term, communication is not the function of language, and may even be of no unique significance for understanding the functions and nature of language*". (Chomsky 2000b, 75) Naturally, I cannot accept this position of Chomsky's since to compare the use of language for communication with a manner of walking or a style of hair is at best a specious argument. However, it must be said that this problem deserves greater attention, but it is beyond the scope of this paper.

I have outlined, necessarily with simplifications, a series of definitions of language resulting from their corresponding theories. Undoubtedly, all of them have contributed in their way to the elucidation of specific aspects of human

language. In order to give a more detailed account of the concept of language, its acquisition and learning, it is necessary to continue in the search for its defining features.

THE FUNDAMENTALS OF SYSTEMIC ANALYSIS

The key concept in various definitions of language is the concept of the system. In view of this fact, it is necessary to shed some light on some basic tenets of a proper theory of systems or create a logical space into which the definition of language will fit. Although the concept of the system has been used by a number of linguists and scholars from other disciplines for a very long time, the general theory of systems took some time to be gradually elaborated. Its origin can be found in the 'process philosophy' or 'philosophy of organism' of A. N. Whitehead (1929) who argued that reality is not composed of substances only, but also of events and their interrelations. According to him, reality is a state of being that occurs in time and is endowed with dynamic features, that is, it is composed of continuously changing entities, modes of becoming and types of occurrences. Thus the world is viewed as an assembly of processes – organic, physical, cognitive, and social – that interact at and across layers of dynamic organization. Moreover, he argued that the traditional cause-effect relationship is insufficient to explain the intricate multi-faceted world we live in. This means that not every observed effect stems from an observable cause and that there are spontaneous effects of many scientific phenomena.

A significant contribution to the general theory of systems was made by the biologist Ludwig von Bertalanffy who in his seminal works *Zur einer allgemeine Systemlehre* (1945) and the volume *General Systems Theory* (1968) belaboured in greater detail various concepts of the theory of systems relating to both physical and non-physical disciplines. Regarding the world not as chaos but as order or organization, he at first outlined the hierarchy of systems (1968, 28 – 29). In this hierarchy language belongs to the sub-group of symbolic systems together with mathematics, logic, arts, morals, etc. Subsequently he elaborated the distinction between closed and open systems and characterized non-liner systems, that is, self-organizing systems in which some phenomena occur spontaneously without any overt causes. Moreover, phenomena cannot be comprehended simply by breaking down the whole into its constitutive parts, but they must be explored holistically along with the environment they belong to.

Generally speaking, the ideas elaborated by Whitehead and von Bertalanffy have been highly influential in expounding and promoting the theory of systems, the new scientific paradigm that had a pivotal role to play in the latter half of

the 20th century. Baicchi (2015, 13), in this connection, rightly mentions Ilya Prigogine, a Nobel Prize winner, who studied the self-organization of systems which are able to unpredictably organize themselves into novel emergent complex structures as a result of the interaction of their internal entities. This means that the security of stable rules is gone for ever and that even small fluctuations may change the overall structure (Prigogine 1984, 313).

In this scientific framework, there has been a fruitful exchange of ideas and methodologies between the natural sciences and the social sciences leading to systems complexity research which is now referred to as Complex Adaptive Systems Approach, or CAS for short. It is assumed that a system as a structured whole consists of entities that interact with each other and with a larger environment. The entities represent the structure of the system and "the behaviour resulting from their interactions influences the system's behaviour" (Baicchi 2015, 14). The term 'behaviour' is defined by Baicchi "as the range of actions and processes performed as a reaction to a great variety of inputs – internal and external to the system's boundaries – in conjunction with the environment in which the system is embedded". The organization of the system is maintained 'by a constant flow of energy and its behaviour is the outcome of a wide range of many different decisions made by individual agents' on the basis of information from the environment in which they occur. It is necessary to observe that behaviours are not random, but they abide by common rules: for instance, agents in society behave according to decision-making rules (e. g. desires, interests, or preferences), while agents in nature follow the rules of physics, biology, chemistry, etc. From the application of all those rules emerges 'a novel global coherence, or dynamic stability, which is not the outcome of predetermined strategy.'

The systems theory differentiates between different kinds of systems. First, systems can be **complex** or **simple** (complex versus simplex). A complex system consists of many agents dynamically interacting in apparently random ways and affecting one another as well the whole system. In the course of time the agents' multiple interactions result in spontaneous self-organization that leads to emergent patterned outputs. In self-organizing systems the constant exchange of energy 'maintains them far from a state of equilibrium, thus enhancing creativity and innovation.'

The second dichotomy is **open** versus **closed** systems. An open system is composed of multiple agents steadily interacting with the surrounding environment in order to maintain its structure and functioning. All living organisms are open systems. Open systems are also complex systems. In contrast, a closed system consists of a limited number of parts and is dependent on its own resources. Examples: a pendulum, an electric circuit.

Finally, systems can be **linear** or **non-linear**. A system can be defined as linear when it is feasible to identify the cause of its effects, or when the effects are directly proportional to the cause. In a non-linear system some effects have no apparent causes or a tiny cause may produce even significant effects. This indirectness of the cause-effect relationship is referred to as *emergence*. This is tantamount to saying that novel and coherent structures and properties appear or emerge during the process of self-organization in complex systems.

In view of what has been said so far, CAS can be defined as open, complex, and non-linear. Each system is an integral part of a wider whole, that is, systems are hierarchically organized. In other words, systems are multi-layered organizations, in which agents at one level represent the building blocks for agents at the higher level. Baicchi (2015, 19) also defines three main types of behaviour that characterize systems: **ordered**, **complex**, and **chaotic**:

> *"Ordered systems show repetitive and predictable cycles of behaviour, while chaotic systems never achieve observable patterns. Complex systems fluctuate between areas of order, where stability enhances storage of information, and areas of chaos, where they can exchange communication. The edge of chaos represents the intermediate region between order and chaos where the opportunity for complex systems to process and exchange information is maximized: it is when they are on the edge that complex systems can learn from their experience."*

Agents are thought to be unaware of the system as a whole and they react only to what is locally known or available. The fact that systems are part of a broader environment also means that when the environment changes, the system itself adapts to the environment, and as a result of the changes of the system, the environment changes, triggering a constant cycle of changes As far as the term cycle is concerned D. Dennett (2012) says that cycles are the hidden spinning motors that power all the phenomena of nature.

One of the pivotal notions which regularly appears in our discussion is the notion of reality. Reality in general is regarded as a state of being which occurs in time and which consists of entities characterized by dynamic features. Naturally, there is not just one kind of reality but scholars distinguish several kinds of what is defined as reality. For example, Harari (2016, 167 – 169) analyses three kinds of reality: objective, subjective, and inter-subjective. In objective reality, entities exist independently of our beliefs and feelings. There are many examples corroborating this kind of reality. The law of gravity is only one of them. Gravity existed long before Newton, and it affects people whether they believe in it or not.

Subjective reality, on the other hand, depends on personal beliefs and feelings. It's how we perceive things. It cannot be objectified or known. For

example, some time ago a friend of mine used to have a feeling that something was wrong with his stomach. However, after a series of tests various doctors did not find anything wrong with it.

Intersubjective reality is a special kind of reality. According to Harari "Intersubjective entities depend on communication among many humans rather than on the beliefs and feelings of individual humans" (2016, 168). Examples: money, laws, gods, institutions, etc. Inter-subjective reality is also mentioned by Leech (1983, 49 – 51) as a missing link in Popper's taxonomy of worlds. In his epistemological theory, Popper (1972, 106) distinguishes three basic worlds: the world of physical objects or physical states, the world of mental consciousness (mental states), the world of objective contents of thought (scientific and poetic thoughts and works of art). It is obvious that these "worlds" plus the inter-subjective reality (societal facts), correspond with Harari's types of reality. Inherent in the above realities are then material processes, mental processes, the processes of having and being, etc. Grammatically, they are expressed by different kinds of predication. This fact has been adequately demonstrated for instance in Halliday's functional grammar. More importantly, however, an essential part of Popper's theory is the fact that he postulated a progression from lower to higher functions in the evolution of human language:

a/ **expressive function** (using language expressing internal states of the individual),

b/ **signalling function** (using language to communicate information about internal states to other individuals),

c/ **descriptive function** (using language to describe things in the external world),

d/ **argumentative function** (using language to present and evaluate arguments and explanations).

Popper's functions of language provide the means of transition whereby one world could have emerged out of another. These functions form a hierarchy, in that a higher function must co-exist with all functions lower than itself, whereas a lower function does not necessarily suggest the presence of higher functions. This hierarchy can be postulated not only phylogenetically (in the linguistic development of the human race) but also ontogenetically (in the development of the individual child).

Radden-Dirven in their cognitive description of English grammar (2007) also made use of different kinds of reality with respect to reality status of situations. They distinguish four types of reality status (2007, 173): known reality, immediate reality, projected reality, and potential reality. This sub-division of reality is useful especially from the point of view of the function

of tense, aspect and modality as basic grounding constituents. Known reality is normally expressed by the past tense, immediate reality by the present tense and the present progressive aspect, projected reality (future reality) by future tense forms, and potential reality by modal verbs, semi-modal verbs, etc.

LANGUAGE AS A COMPLEX ADAPTIVE SYSTEM

It is evident that a number of tenets, principles and conceptual frameworks that spring from CAS, such as emergentism, complexity, adaptability, different kinds of processes, dynamic stability, etc., can be also applied (and many of them have already been applied) to the theoretical exploration of language. This perspective on language has been studied in greater detail especially by the "Five Graces Group" (2009) – which is a common name for ten authors, and A. Baicchi (2015) who has already been mentioned in the preceding section and who has synthesized a number of approaches to it. Both works are therefore reliable sources of information for my paper.

By incorporating language into the space of complex adaptive systems at the same time implies that it becomes easier to describe its interactions and interrelations with social and cognitive environments. Language thus functions as a linking system between culture and nature even though language has a fundamentally social function.

Considering the previous discussion, I endorse the view that *language is a complex adaptive and non-linear system of symbols and non-verbal signs which people use for communication with other human beings enabling them to participate in joint actions and self- actualize in a given national and international society or speech community.* In order to better understand this definition, it is pertinent to illuminate its basic terms and implications: complexity, communication, emergence, non-linearity, adaptability.

Complexity is supposed to mean that language is a hierarchically organized supra-system. As such, it traditionally consists of three basic sub-systems – phonological, grammatical, and lexical (semantic). The sub-systems are intertwined and interconnected in dynamic and complex ways. Language is a hierarchical (or articulated) system. The word hierarchical refers to the property in languages of being able to build up units of one order into units of another order, that is, not merely something larger, but something functioning in quite a different way from its component parts. Thus in grammar, which is built around symbols for major lexical categories (noun, verb, adjective, adverb, preposition), words plus morphemes, the smallest meaningful units in language, can be articulated into phrases (groups), phrases can be articulated

into clauses, and clauses can be combined into sentences. The other building blocks of grammar that are universally posited are: rules for positional (linear) ordering of words (directional parameters for ordering heads, complements and modifiers or qualifiers), case affixes on nouns marking nouns according to argument role, and linking nouns with predicates, verb affixes which signal the internal temporal distribution of the event that the verb refers to (aspect) and its location in time (tense), transformational rules, etc.

While the grammatical sub-system is concerned with the internal structure of language, that is, the way in which language is internally organized, the phonological sub-system is concerned with the external manifestation of language (articulation). This sub-system is also hierarchically organized since here we can distinguish segmental and supra-segmental phenomena. Obviously, the concept of hierarchy can be also applied to the lexical sub-system.

The phonological and grammatical subsystems consist of a limited number of elements (there is a limited number of phonemes, and a limited number of grammatical categories, and in this sense they are closed subsystems), but the lexical subsystem is composed of an unlimited number of elements. However, greater importance in this connection should be attached to the fact that the said subsystems constantly compete, merge, interact and collaborate with each other to produce a coherent discourse or a coherent text carrying specific propositional and pragmatic meaning with regard to a relevant situational context. The propositional meaning refers to that part of the meaning of a sentence that is constant irrespective of the form it takes (see e. g. Radden-Dirven 2007, 162).

Normally, the production of coherent and relevant discourse takes place in the process of communication. The process of communication as a joint action or a shared cooperative activity is thought to consist of two dimensions – semantic dimension realized by linguistic conventions and a variety of constructions, and pragmatic dimension carried out by a set of speech acts, pragmatic presumptions and principles.

There are two important notions relating to the semantic dimension: **grounding** and **setting**. The notion of grounding is concerned with "the speaker's 'anchoring' of a situation and its participants in the speech situation shared by speaker and hearer" (Radden-Dirven 2007, 48). The process of grounding, in fact, signals information about who or what he is talking about, when the situation happened in relation to the present moment of speaking, and whether it is factual or potential. The basic grounding elements are determiners, tense, aspect, modality, semantic roles of clause elements, etc. In order to realize successful communication, the grounding elements are obligatory in every sentence:

My son has bought a car, and he may also buy a bike.

It is immediately clear that the grounding elements are determiners and a pronoun (*my*, *a*, *he*), present perfect, and the modal auxiliary *may*.

Unlike grounding, the concept of setting refers to the background against which a situation is set. It provides information about when and where the event happened, why it happened, the conditions under which it happened, etc. Setting elements specify the factors surrounding a situation in more detail. They include adjuncts which as a rule are not obligatory.

In addition to regular grammatical patterns generated by the application of relevant rules, in every language there is an inventory of ready-made or prefabricated constructions, such as idioms, proverbs, clichés, formulae, openings, closures, greetings, and various institutionalised expressions which include short grammatical utterances (e. g. *Not yet. Certainly not. Just a moment, please.)*, and sentence heads or frames (e. g. *That's all very well but…Sorry to interrupt but…)*. M. Lewis (1996, 94) says that the number of memorised sentences which the mature English speaker knows is many thousands.

A new theoretical approach to language has emerged in the past 25 years that does not differentiate between core grammatical patterns and more or less marginal ready-made structures. It is referred to as a constructionist approach. Its main representative is Adele E. Goldberg (see e. g. 2003) who operates with constructions as a general term for form-meaning pairings. This means that all levels of descriptions are understood to involve pairings of form with semantic or discourse function, including morphemes, words, complex word idioms (filled and partially filled), conditional correlative construction (e. g. the sooner the better), ditransitive verbs, passive voice, etc. According to researchers in this field "unusual constructions shed light on more general issues, and can illuminate what is required for a complete account of language" (Goldberg 2003, 219). Goldberg has also formulated six tenets of constructionist approaches (p. 219) which are shared by most constructionist approaches. They also include cross-linguistic considerations, which can produce a wealth of important data, but it is Tenet 7 that defines the essence of constructionist approaches: "The totality of our knowledge of language is captured by a network of constructions: a 'construct-i-con.'" (Goldberg 2003, 219)

As far as the pragmatic dimension of the process of communication is concerned, the key concept to be considered first is that of the **speech act**. Speech acts are acts of communication performed by the use of language, either in speech or writing. They not only present information, but carry an action as well. Speech acts are generally used to describe actions such as requesting, commanding, questioning or informing. We can define a speech act as the action performed by a speaker with an utterance.

There are three basic types of speech acts: locutionary (articulating, whispering, shouting, murmuring, etc.), illocutionary (asserting, promising, reporting, asking, etc.), perlocutionary (intimidating, persuading, deceiving, etc.). It would be pointless to present here a detailed taxonomy of speech acts since it is beyond the scope of this paper. The same holds also for basic theories of the process of communication. Suffice it to say that there are two basic theories of human communication – **code theories** and **inferential theories**. Code theories are traditional theories which have their origin in the Shannon-Weaver's model from the year 1949 (Shannon-Weaver 1949). Code theories treat communication as involving three essential phases: encoding what the speaker intends to say (message), transmission of the message (signals) through the channel of communication, receiving and decoding the message by the hearer.

In inferential theories, which were inspired by Grice (1975), the process of communication is thought to be a problem solving activity, and it is successful when the communicator understands a communicative intent of the sender of information. In this sense, utterances are regarded merely as pieces of evidence about the communicative intentions (see e. g. Wilson 1997). Language communication functions because participants have a common system of inferential strategies and principles which enable them to identify the intended meaning (the communicative intent of the sender of information). This means that inferring communicative intents is not a random activity, but it is guided by a set of specific principles. At first, It was Grice (1975) who formulated the so-called Cooperative Principle (CP) with its maxims (Quantity, Quality, Relation, Manner). Not surprisingly, there have been objections to the CP. For example, G. Leech (1983, 80) claims that the CP in itself cannot explain why people are often so indirect in conveying what they mean, and what is the relation between sense and force when non-declarative types of sentences are being considered. For this reason, he has formulated his Politeness Principle (PP), but not as a separate principle, but as its necessary complement functioning in the framework of interpersonal rhetoric. The PP consists of four basic maxims: maxim of tact, maxim of generosity, maxim of approbation, and maxim of modesty.

Unlike Grice and Leech, Sperber and Wilson (e. g. 1986, 1998) have a different view of inferential communication. Finding Grice's approach very sketchy and with a low degree of explicitness, they introduced the idea of **relevance** which they defined as a property of utterances and other inputs to cognitive processes. The processing of an input may yield some cognitive effects (e. g. strengthening of existing assumptions, contradiction and elimination of existing assumptions), and the greater the effects, the greater the relevance of the input.

The processing of the input requires some mental effort. The greater the effort, the lower the relevance. On this basis the authors have formulated two principles: **cognitive principle of relevance** (Human cognition tends to be geared to the maximisation of relevance) and **communicative principle of relevance** (Every utterance – or other act of overt communication – communicates a presumption of its own relevance). Inherent in the communicative principle of relevance is the following interpretive procedure which according to the authors is automatically applied to the on-line processing of utterances:

Relevance-theoretic comprehension procedure:
a. Follow a path of least effort in computing cognitive effects,
b. Stop when the expected level of relevance is reached.

In other words, the hearer takes the conceptual structure recovered by linguistic decoding; following a path of least effort, he enriches it at the explicit level and complements it at the implicit level, until the resulting interpretation meets his expectations of relevance; at which point he stops.

I have sketched out only some essential accounts of the process of communication, but it is obvious that besides the afore-mentioned dimensions and principles, there is a number of other characteristics, strategies and tendencies which merit attention, and the prospect of exploring them is an interesting and useful one.

Language is used by multiple speakers and writers or agents who continually communicate and interact in an infinite variety of situations. In fact, people start to communicate when they are born and communication ceases when they die. In the course of their lifetime individual agents are exposed to language, and this exposure to language results in their personal idiolects. These idiolects in their entirety constitute a common language of a given speech community (some scholars call it a communal language). Of course, within the common language there also exist dialects, that is, regional varieties of the common language, sociolects (dialects of a particular social class), ethnolects, etc. It is axiomatic that human languages are in a state of flux, that is, they constantly change in order to optimize communication. The changes in a language are called forth by constantly changing environment, changing needs and desires of people, fashion, etc. The result is not caused by the simple sum of factors, but is a vectorial product **emerging** from multiple individual interactions between language users. This is also to say that language is a flexible tool which responds to the demands of communicative functions and emerges from constant exposure to instances (exemplars) of language.

In the process of communication, communicators become aware of repeated language patterns and constructions. The repetition and imitation of language

patterns is not absolute but changes over time, which results in linguistic variation. Continuous and gradual exposure to the numerous regularities of language patterns shape and reshape the cognitive representation of grammar. It is important to realize that repetitions of the multiple cognitive events triggered by an array of independent cognitive processes, such as association, automatization, schematization, categorization (see Langacker 2008, 16 – 17) result in knowledge stored in long-term memory. This means that a complex structure is thoroughly mastered to the point that its use becomes virtually automatic and requires little conscious monitoring. According to Langacker, a structure undergoes progressive **entrenchment** and eventually becomes established as a **unit**. Moreover, units are variably entrenched in the minds of individual speakers as well in the whole speech community depending on the frequency of their occurrence.

The units of language, from individual morphemes to complex sentences, are according to Baicchi, following Langacker, mentally entrenched routines representing single gestalts that are made of conventional form-meaning pairings. When such units come into being, their components do not thereby cease to be identifiable as substructures. They only become less salient because the speaker no longer has to attend to them individually. Owing to this, such units are highly flexible in nature enabling the speaker to manipulate them easily and adjust them into other syntactic structures.

Grammatical patterns are pervasive in language, and they emerge diachronically, synchronically, and ontogenetically (language acquisition and learning). It has already been stated that a large part of language is an inventory of prefabricated and ready made structures. Following are more examples of this kind: *How are you doing? Can I help you? Enjoy yourself. Take care. How do you do?* This fact is well known for a considerable period of time. In standard English grammars it is often referred to as formulaic language. This kind of language can be also regarded as an integral part of the semantic dimension of the process of communication. And the formulaic language is thought to be responsible for the development of grammar and language creativity.

In the process of acquisition of L1 such an array of linguistic chunks (constructions) are memorised by speakers as individual wholes, that is, they are learnt lexically. The same holds for L2 learning. According to various authors, L2 learners first memorize linguistic chunks, then they analyse them structurally so as to understand how they can creatively produce new utterances. The most frequently used patterns, many of which are formulaic in nature, become gradually routinized in the speakers' minds, that is, they appear (emerge) spontaneously in the language faculty. Frequency of occurrence exerts

influence on the individual speaker as well on the whole speech community. As such it helps routinization and automatization of linguistic and cognitive units.

Undoubtedly, the afore-mentioned concise conception of L1 acquisition and L2 learning can be also incorporated into the communicative approach (CA) to teaching English and other foreign languages (see e. g. Richards 2006). This approach is theoretically and practically justified since its main principles are derived from the basic attributes of the process of communication (its semantic and pragmatic dimensions) and the concept of communicative competence (see e. g. O'Grady-Dobrovolsky-Aronoff 1997, 480) This approach is to be implemented both in the phase of planning the teaching process (syllabuses and course-books) and also in the phase of its realization (teacher-pupil interactions, activities, tasks, procedures). A special attention should be paid especially to the frequency of occurrence of linguistic constructions, their repetitions, inductive generalizations, context-free and context-sensitive grammar, etc. These are only a few factors which the teacher must take into account when realizing the process of teaching.

I have outlined various definitions and perspectives on language and endorsed the view that language is a complex adaptive system. However, I fully realize that this perspective on language is not the only way to look at language. The scientific study of language can make use of various theories (see e. g. Jackendoff 2012, 15) with their corresponding definitions, including e. g. the neural perspective studying the activity of the neurons in the speaker's brain. It is common for linguists 'to shift freely among perspectives, using one perspective to help explain certain properties of another'. In this sense, the choice of a perspective depends on our goals.

CONCLUSION

To sum up, language is an open and complex adaptive and non-linear system of symbols and non-verbal signs which people use for communication with other human beings enabling them to participate in joint actions and self-actualize in a given national and international society or speech community. Language structures emerge from reciprocally interconnected models of experiences, social interactions and cognitive processes. Language has a fundamental function in human society and culture. It is constantly in a state of flux, or in other words, it is open to changes in the environment. Language changes are therefore necessary to maximize the process of communication.

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